
Prehospital Pediatric Care

Pediatric Basics

Provider Manual

Prehospital Pediatric Care Provider Manual

Acknowledgement

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Introduction

The Prehospital Pediatric Care curriculum is a combination of theory and practical skills. Each part is equally important and interdependent.

The theory portion is provided for you via Modules of Instruction. The modules each include a workbook and videotape.

The **workbook** is your personal resource and study guide. It provides directions that guide learning and is a means for you to privately evaluate your comprehension of the information being presented. It should also encourage and motivate communication between you and your course instructor or medical advisor.

The **videotapes** are your primary source of information. They are organized in segments that allow you to review individual parts as necessary to comprehend and retain the material. The videotapes contain many details relevant to the care of children and should be studied as you would a textbook.

Practical skills are taught via skill stations. They are the second portion of the curriculum and are organized separately within each agency.

It is exciting to learn this new material and you should feel a sense of pride and accomplishment during the course. You should also expect to realize a direct correlation between your mastery of the concepts and your study time. You will find that you need to review this material often to maintain a sound knowledge base. Because you USE it less often, you will LOSE it quickly!

Basic Course Directions

Read the **Desired Outcomes** for each part. These will give you clues to what knowledge you should gain by completing this course.

View the part of the **Videotape** that corresponds to your workbook section. Place the videotape in your VCR and reset the video counter to OOOO. The counter numbers shown are approximate (your VCR must be in "SP" or standard, 2-hour play mode).

Between sections of the program you may either pause or stop the videotape. Caution: Be aware that long pause times can damage the tape.

Take notes of concepts you want to reinforce and complete the blank segments of the Desired Outcomes as you watch the videotape. Jot down any notes or questions in the sidebars of your workbook. Discuss topics or questions with your instructor.

Complete the **Quiz Questions**.

Evaluate your comprehension of the section. Try to fill in the Desired Outcomes again from memory. Review or continue as desired.

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Course Philosophy – Part A

This beginning portion of the curriculum describes the balance which must occur between field intervention and transport. It emphasizes the need to expeditiously transport ill and injured children to areas where there are medical specialists with equipment geared to pediatric care. It also outlines life-threatening factors which must be considered before undertaking transport.

VIEW VIDEOTAPE PEDIATRIC BASICS – PART A

DESIRED OUTCOMES

The completion of Part A should enable you to:

1. List five factors or conditions which must be evaluated in all children prior to transport.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
2. Describe at least three prehospital procedures which are time consuming, potentially delay transport and thus require careful consideration as to need or benefit.
 - a. _____
 - b. _____
 - c. _____
3. Describe two conditions or situations which extend transport time and cause consideration of increased prehospital intervention.
 - a. _____
 - b. _____

QUIZ

Circle the letter which best answers the question. There is only one correct choice.

1. You have responded to the scene of a bicycle/auto accident. A 7 year old boy is lying about 20 feet from the car. He is moaning incoherently, has blood leaking from both his nose and mouth, and has an obvious fractured femur. Respirations are cheyne-stokes; pulse 66. Which of the following interventions would you do prior to beginning transport to the hospital, which is 25 minutes away?
 - a. Secure the airway and apply a cervical collar
 - b. Stabilize the fractured leg using a HARE or other traction splint and obtain a blood pressure
 - c. Establish bilateral IV's using lactated ringers solution
 - d. Perform a secondary survey after removing clothing to ensure that all injuries have been found

2. Which of the following would be the most appropriate field intervention when you are treating a 1 year old child who is unconscious after being ill with flu like symptoms, has a pulse rate of 182 and respirations of 62? You are 10 minutes from the hospital.
 - a. Insert oropharyngeal airway, apply oxygen per mask at 10 liters and initiate transport
 - b. Determine core temperature while your partner is starting an IV. Use lactated ringers solution
 - c. Initiate CPR as the CNS is not being perfused
 - d. Apply oxygen at 10-12 liters per mask, start an IV of LR and inquire of caretaker regarding health status of child

3. Which of the following interventions should usually be omitted when the hospital is only a short distance from the scene?
 - a. Oropharyngeal airway and oxygen
 - b. Vital signs
 - c. Cervical collar and backboard
 - d. Secondary survey

4. Match the numbered interventions to the appropriate problems. A number can be used more than once.
- a. Cardiac arrest due to auto/bike trauma _____
 - b. Complete upper airway obstruction _____
 - c. Bilateral fx femurs with no palpable B/P _____
 - d. Unconscious from unknown ingestion _____
-
- 1. Establish IV line and transport
 - 2. Begin transport – attempt treatment en route
 - 3. Secure airway, initiate CPR, and transport
 - 4. Start O2, start bilateral IV's, apply MAST, and request medications
 - 5. Secure airway, administer O2, and transport

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Psychological Aspects – Part B

Serious Illness and injury always instill strong emotional responses; but when the patient is a child, the effects are often overwhelming. Psychological dynamics intensify and there is a pervasive feeling of fear that invades the child, the parents and you.

Childhood is normally a time of fantasy and imagination, but illness or injury can cause alterations in usual thinking and behavior. Children can regress in behavior, have nightmares, wet the bed and have alterations in emotional responses or even severe depression.

Parents often experience extreme anxiety which is manifested in combinations of feelings such as denial, shock, grief, guilt and anger. Your interaction with parents can help relieve and soften these destructive emotions.

Fear and stress are the primary responses of persons such as yourself to the job of caring for children. These two feelings can exact a heavy toll. You may experience nightmares, flashbacks, palpitations and depression. You can become hypertensive and turn to drugs alcohol to escape the stress.

Destructive stress does not have to occur. It can be managed and its effects can be prevented by education and by knowledge of how to care for yourself as well as your pediatric patients.

VIEW VIDEOTAPE PEDIATRIC BASICS – PART B

DESIRED OUTCOMES

The completion of Part B should enable you to:

1. List five factors specific to the care of children which evoke stress in prehospital providers.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
2. Describe three actions which can reduce or inactivate the stress felt by prehospital providers.
 - a. _____
 - b. _____
 - c. _____
3. List four fears characteristic to ill or injured children.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
4. Define four reactions commonly seen in parents when their children are severely ill or injured.
 - a. _____
 - b. _____
 - c. _____
 - d. _____

5. Describe at least three techniques or actions which you can use to diminish the fears and/or stresses felt by the child and the parent.

a. _____

b. _____

c. _____

QUIZ

1. Which of the following is NOT a factor which creates stress in prehospital providers who care for children?
 - a. Lack of exposure
 - b. Awareness of insecurity
 - c. Personalization
 - d. Nature of the illness or injury
2. Which of the following usually increases the degree of stress felt by prehospital personnel when dealing with pediatric emergencies?
 - a. Sex of the child
 - b. Age of the child
 - c. Reactions of the child to being injured or ill
 - d. Outcome of the emergency situation
3. Which of the following is not a reaction that can occur in a child as a result of being severely ill or injured?
 - a. Wetting the bed
 - b. Loss of hair and weight gain
 - c. Dreams and/or nightmares
 - d. Depression
4. Which of the following actions by prehospital personnel most often establish trust and confidence in parents?
 - a. Let them know your job title and length of experience
 - b. Tell them about other similar cases you have worked on and their outcomes
 - c. Move them away from the situation so they only have you to focus upon
 - d. Explain your actions and allow them to help if appropriate
5. Which of the following responses would be most appropriate when parents ask you if their child is going to die?
 - a. Tell them you are not allowed to make such a diagnosis
 - b. Explain the gravity of the problem and what is being done
 - c. Tell them that the doctor will explain all possibilities when they reach the hospital
 - d. Describe all life signs that are still present and explain the medical care that will be given in the hospital

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Growth & Development – Part C

A determination of illness or injury in a child is based upon your recognition of abnormal behavior or abnormal response as well as the typical signs and symptoms. Recognition of abnormalities requires knowing what is normal. In addition, the emotional and behavioral development of the child guides your techniques of interaction.

VIEW VIDEOTAPE PEDIATRIC BASICS – PART C

DESIRED OUTCOMES

The completion of Part C should enable you to:

1. Describe the growth and development characteristics and the major illnesses/injuries for each of the following age ranges:

- a. 0-3 months

Growth & Development_____

Major Illnesses & Injuries _____

- b. 3-6 months

Growth & Development_____

Major Illnesses & Injuries_____

- c. 6-12 months

Growth & Development_____

Major Illnesses & Injuries_____

- d. 1-3 yrs / toddler

Growth & Development_____

Major Illnesses & Injuries_____

- e. 3-6 yrs / preschooler

Growth & Development_____

Major Illnesses & Injuries_____

- f. 6-12 yrs / school age

Growth & Development_____

Major Illnesses & Injuries_____

- g. 13-18 yrs / Adolescence

Growth & Development_____

Major Illnesses & Injuries_____

2. List an interaction which would be most appropriate for each of the following age ranges:

a. Adolescent _____

b. 6-12 months _____

c. Toddler _____

QUIZ

1. Which age range is best described by the following characteristics? Functions by instincts and reflexes; obligate nose breathers; not afraid of strangers; susceptible to heat loss and dehydration.
 - a. Toddlers
 - b. 6-12 months
 - c. 0-3 months
 - d. 3-6 months
2. Which of the following observations should alert you to the possibility of severe illness in an infant?
 - a. Crying, pink or red about the face and neck, refusing to take a bottle
 - b. Ignores you as you talk and examine even though you are a stranger; seems to ignore the parent as well
 - c. Limp, listless and non responding during your examination
 - d. Crying constantly despite all you or the parent can do to comfort and quiet
3. The classic age for febrile seizures, aspiration and upper airway obstructions is?
 - a. 0-3 months
 - b. 3-6 months
 - c. 6-12 months
 - d. Toddler
4. Which of the following problems is MOST COMMON to all children below the age of 3 years?
 - a. Febrile seizures
 - b. Poisonings
 - c. Falls
 - d. Respiratory infections
5. The major cause of morbidity/mortality in the 3-6 age range child is?
 - a. Blunt trauma
 - b. Poisoning
 - c. Meningitis
 - d. Epiglottitis

6. At what age do children usually become aware of their physical characteristics and modesty?
 - a. 6-12 months
 - b. 6-12 yrs
 - c. 1-3 yrs
 - d. 3-6 yrs
7. The leading killer of school age children is?
 - a. Diabetes
 - b. Infections
 - c. Child abuse
 - d. Trauma
8. The age range most associated with emotional fragility is?
 - a. 1-3 yrs
 - b. 6-12 yrs
 - c. Adolescence
 - d. 3-6 yrs
9. Which of the following will be over emotional when seeing a simple wound, anxious about the absence of a parent and resistive to being examined?
 - a. Preschooler
 - b. School age
 - c. Toddler
 - d. Adolescent
10. The characteristic which provides greatest danger to the adolescent is?
 - a. Immodest
 - b. Imaginitive
 - c. Emotional
 - d. Invulnerable

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Pediatric History – Part D

The unique aspect of obtaining a pediatric history is that the source must vary according to the age of the patient. Information regarding the neonate, infant and young child comes from the parent **or** caregiver.

Children about age four are verbally able to tell you where it hurts or what has happened, but they are not able to provide past history and may be too frightened to be a reliable source of information. Older children and adolescents are usually a very helpful source of relevant information.

You may follow the order you usually use when taking an adult history and just include the weight of the child, or use the letters AMPLE as a guideline. AMPLE is described in the video.

Since taking a history is actually a skill, it is suggested that you practice asking history questions with various children and with parents of different age children.

VIEW VIDEOTAPE PEDIATRIC BASICS – PART D

DESCRIBED OUTCOMES

The completion of Part D should enable you to:

1. Describe four observations which should be made "on scene".

a. _____

b. _____

c. _____

d. _____

2. List the essential elements of a patient history.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

3. Outline the elements of the guideline AMPLE:

a. _____

b. _____

c. _____

d. _____

e. _____

QUIZ

1. Which of the following statements is correct regarding the pediatric history?
 - a. A history must be obtained on children younger than 4 years or the hospital will be unable to provide safe care
 - b. An evaluation of the ABC's always follows the history regardless of the situation
 - c. An on-scene observation precedes the history and is a unique prehospital function
 - d. You can't use information provided by the child as they are too emotional to be of value

2. When asking questions about past medical history in the neonate and infant, you should?
 - a. You can skip this area as such young children have no past medical history
 - b. Ask about problems with other siblings in the household
 - c. Ask about pregnancy and delivery problems
 - d. Inquire about health problems of the father and mother

3. Which of the following is not correct regarding the mnemonic AMPLE?
 - a. M stands for medications the child is taking
 - b. P stands for the problem that initiated calling EMS
 - c. A stands for allergies
 - d. L stands for last meal

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Physical Examination – Part E

Unique aspects of the physical examination include:

The child's perceptions:

How you look, talk and perform the exam will be perceived differently and will leave an impression with each child. A child's perception of touching is determined by age, degree of illness or by pain; for many, your need to touch during the exam will be perceived with fear. Always observe prior to touching and touch only as necessary. Try playful distractions with toys or objects.

The child's fears:

The many fears which ill or injured children experience have been previously described. When the child cries and resists due to fear, these reactions can inhibit the exam process. When appropriate, perform your examination while the parent is holding and comforting the child and examine the area of most concern early, before the child starts to cry unless this exam will cause pain. If it will, leave it until last.

The exam order:

When working with the very young, use the toe-to-head approach as it allows more distraction and is less threatening. Many children dislike having their heads touched, especially toddlers and preschoolers. A toe-to-head exam is demonstrated in the video. When working with older children, use your adult head to toe approach.

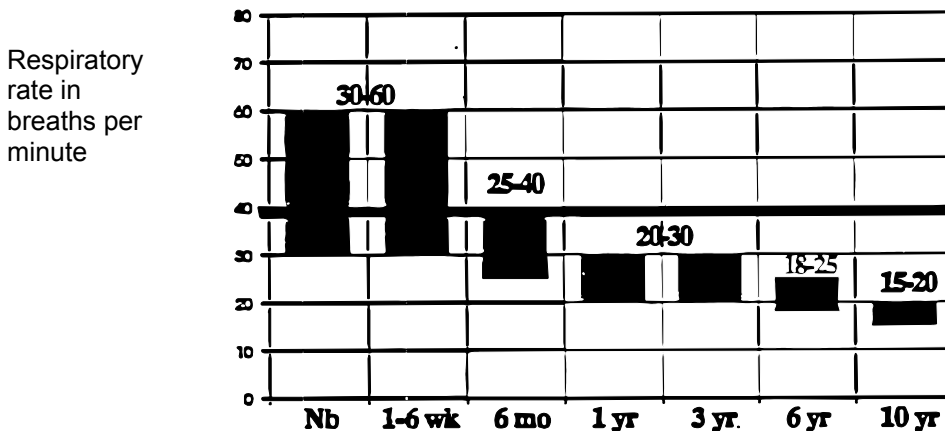
Vital Signs:

The vital signs for children are difficult at best as they change with normal growth and development. The video provides some guidelines, formulas and charts which will assist in this aspect of the exam process.

Respiratory Assessment

The presence and characteristics of crying or talking indicate the patency of the airway. Problems are indicated by hoarseness, moaning, nasal flaring, stridor, wheezing and grunting. Count the rate by observation of the rise and fall of the abdomen. Listen to breath sounds with a stethoscope.

Pediatric Respiratory Rates



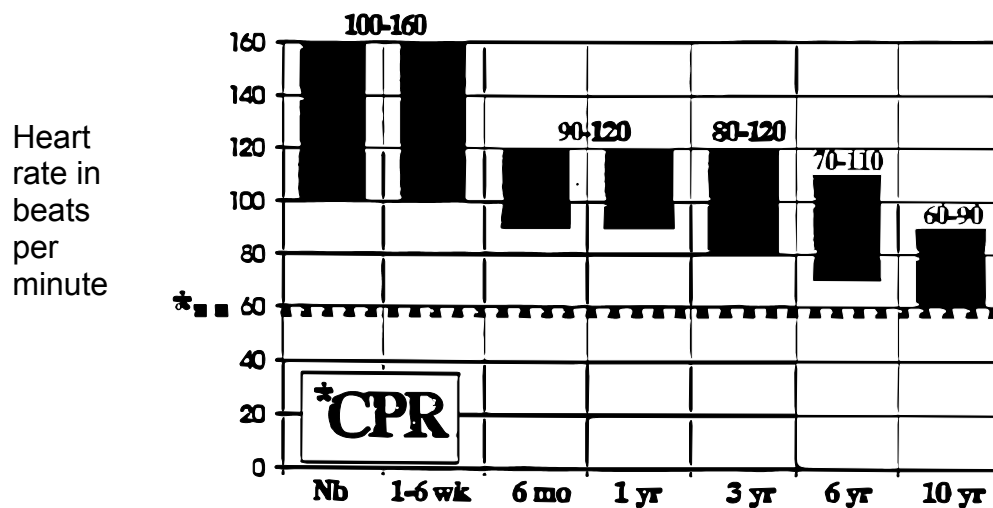
Circulatory Assessment

Capillary refill is a reliable indicator of circulation and perfusion. The pressed or blanched area should refill in 1 to 2 seconds to be considered normal. The sternal area is more reliable in young children and is recommended over peripheral areas.

Count the heart rate by palpation of the carotid, brachial or radial areas depending on the age or condition of the child. Auscultation with the bell end of an adult stethoscope or pediatric stethoscope will also provide an accurate heart rate.

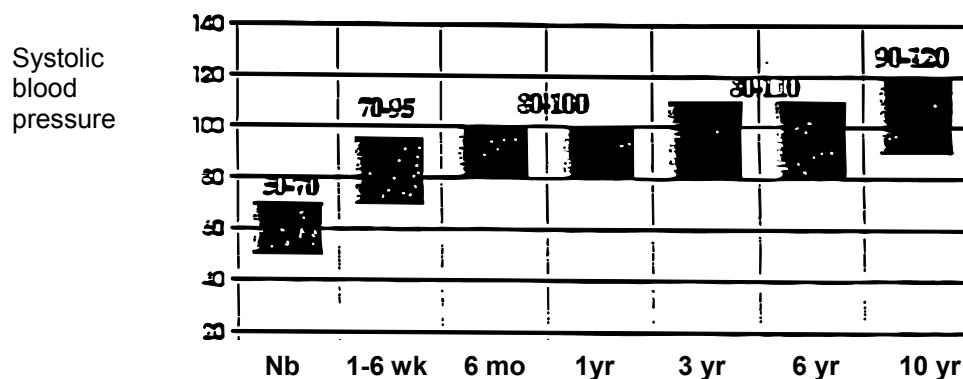
Sinus tachycardia is common in children. It accompanies fear, fever and similar problems. Bradycardia and asystole are the two most common LETHAL dysrhythmias.

Pediatric Heart Rates



Evaluate the blood pressure. As this is often done by palpation, it can be done en route to the hospital.

Pediatric Blood Pressures



Neurologic Assessment

Infants and young children should be alert, aware and interested in what is happening to them. If lethargic and uninterested, they can be considered decreased in LOC. You may need a parent to help you determine the alertness of a very young infant.

Calculation of Weight

The determination of weight is important in giving IV fluids and medications but should be done in kilograms rather than pounds.

One recommended method takes the child's weight in pounds and divides this by 2.2, which yields kilograms. Using this formula, a 30-pound child would weigh 13-14 kilograms.

VIEW VIDEOTAPE PEDIATRIC BASICS – PART E

DESIRED OUTCOMES

The completion of Part E should enable you to:

1. List five observations specific to children which should be evaluated during the Primary Survey:
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
2. Describe the process of assessing the respiratory rate of an infant or young child:
Observe: _____
Count: _____
3. List the normal respiratory rate for each of the following:
 - a. 6 week old infant _____
 - b. School age child _____
4. Describe the location for assessing the heart rate of children by palpation:
 - a. Infants _____
 - b. Older children _____
5. List the normal heart rate for each of the following:
 - a. 6 week old infant _____
 - b. School age child _____
6. Outline the formula for estimating the blood pressure of children over 1 year of age.

7. Outline the formula for estimating the kilogram weight of children.

8. List five observations specific for children which should be evaluated during a secondary survey.

a.

b.

c.

d.

e.

QUIZ

1. Which of the following observations would best provide an evaluation of Level of consciousness in an infant?
 - a. Awareness of strangers
 - b. Movements or activity
 - c. Changes described by parents or caregivers
 - d. Reaction to noise
2. Which of the following observations would LEAST indicate that there is possible obstruction to the airway?
 - a. Hoarseness
 - b. Stridor
 - c. Nasal flaring
 - d. Decreased capillary refill
3. A 2-year-old child is grunting and sitting with her arms wrapped around a pillow. She is ashen in color. Her respiratory rate is 55 and her heart rate is 128. Which of the following would provide the best care for this child?
 - a. Leave her in the position of choice; apply oxygen per mask at 10-12 liters and transport ASAP
 - b. Leave her in the position of choice; apply oxygen per nasal cannula and start an IV of lactated ringers
 - c. Lie her flat and assist her ventilation with bag/valve/mask at 100% oxygen flow. Transport ASAP
 - d. Arrest is imminent. Place on a backboard and begin transport. Prepare to intubate if possible and start bilateral IV lines with LR en route
4. You are called to a private residence where the caregiver of a four-month-old infant tells you the baby fell from his crib. You observe the side rails are in the raised position and the blankets and sheets are dirty and smell of urine and emesis. The infant's respirations are 54 per minute. The pulse is 118. Which of the following statements is correct?
 - a. The baby probably did pull himself up and fallout. He does not appear injured and vital signs are within normal range
 - b. The story of the fall is not consistent with normal growth and development. The baby's respirations are increased/pulse is within normal range
 - c. The story is not consistent with growth and development characteristics. The respirations are normal but the pulse is elevated
 - d. The story is consistent with growth and development guidelines for this age child. The respirations and pulse are both elevated

5. The normal heart rate for a school age child would be?
 - a. 60 - 100
 - b. 90 - 120
 - c. 70 - 90
6. Which area should be used when palpating the pulse of a 3 yr old child?
 - a. Brachial
 - b. Radial
 - c. Carotid
 - d. Apical
7. Which area should be used when palpating the pulse of an infant?
 - a. Brachial
 - b. Radial
 - c. Carotid
 - d. Apical
8. The formula for estimating the systolic blood pressure of a child over 1 year of age is?
 - a. $8 + 4 \text{ times the age in years}$
 - b. $80 + 2 \text{ times the weight}$
 - c. $80 + 2 \text{ times the age in years}$
 - d. $2 + 80 \text{ minus the weight}$
9. The formula for estimating the kilogram weight of a child is?
 - a. Age times 2 plus 8
 - b. Age times 8 plus 2
 - c. Age plus 80
10. The cardiac arrhythmias most often seen in severely ill or injured children are?
 - a. Heart blocks
 - b. Tachycardia/fibrillation
 - c. Bradycardia/asystole
 - d. Sinus and atrial tachycardia
11. The least reliable indicator of decreased cardiovascular status and shock is?
 - a. Hypotension
 - b. Heart rate
 - c. Capillary refill
 - d. Level of consciousness

12. When performing a secondary assessment, which observation would most likely indicate the presence of dehydration?
- a. Lack of wrinkles on upper thigh or buttock area, primarily on the right side
 - b. Extended capillary refill
 - c. See-saw respiration
 - d. Sunken fontanel